REMARKS

This application has been reviewed in light of the Office Action dated July 1, 2005. Claims 1, 2, 4-6, 8-15, 18-26, and 28-34 are presented for examination. Claims 3, 7, and 27 have been canceled, without prejudice or disclaimer of subject matter. Claims 16 and 17 have also been canceled, and their recitations incorporated into claim 15. Claims 1, 8, 15, 20, and 29 have been amended to define still more clearly what Applicants regard as their invention. Claim 14 has been amended to depend from claim 12. Claim 26 has been amended as to matters of form only. No change in scope is either intended or believed effected by at least these latter changes to claim 26. Claim 34 has been added to provide Applicants with a more complete scope of protection. Claims 1, 20, and 26 are in independent form. Favorable reconsideration is requested.

Applicants note with appreciation the indication that claims 6, 7, 10, 15, and 25 would be allowable if rewritten so as not to depend from a rejected claim, and with no change in scope. Claim 1, the base claim of claim 7, has been rewritten to include the recitation of allowable claim 7 and to overcome the 35 U.S.C. § 112, second paragraph, rejection, discussed in further detail below. Accordingly, Applicants submit that claim 1 is now in condition for allowance. Independent claim 20 has also been rewritten to include the recitation of allowable claim 7. Accordingly, Applicants submit that claim 20 is also in condition for allowance.

Claim 13 was rejected under 35 U.S.C. § 112, first paragraph, for lack of enabling disclosure.

Applicants respectfully traverse this rejection. Claim 12 from which claim 13 depends states that at least a portion of the surface [of the bone implant] has a thin coating having substantially no effect on the X-ray transparency. Claim 13 recites that the coating is made of a metal selected from at least one of the group consisting of titanium, gold, and platinum. The specification at page 4, last paragraph, states that the coating may be so thin so as to have a negligible effect on radiation or X-ray transparency.

Applicants agree with the Examiner that a metal coating may have a substantial effect on X-ray transparency. However, the amount of the effect on X-ray transparency is based on the amount of metal used. Thus, a thin coating of metal may have a negligible effect, or substantially no effect on X-ray transparency. Applicants submit that claim 13 is clearly enabled because the thickness of the coating is "so thin so as to have a negligible effect on radiation or X-ray transparency," as stated in the specification. Accordingly, Applicants

respectfully request withdrawal of the rejection of claim 13 under 35 U.S.C. § 112, first paragraph.

Claims 1-25, 27, and 29 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. These claims have been carefully reviewed and amended as deemed necessary to ensure that they conform fully to the requirements of Section 112, second paragraph, with special attention to the points raised on page 3 of the Office Action. Specifically, claims 3 and 27 have been canceled, and claims 1, 20, and 29 have been amended to delete the reference to the dimensions of the surface irregularities It is believed that the rejection under Section 112, second paragraph, has been obviated, and its withdrawal is therefore respectfully requested.

Claim 8 was objected to for use of improper Markush language. Claim 8 has been amended to include proper Markush language. Specifically, the phrase "from at least one of the group selected from" has been amended to read --from at least one of the group consisting of--. Claim 8 was further objected to because of the misspelling of two terms. Applicants have amended claim 8 to correct any misspellings of the terms identified by the Examiner. Applicants submit that the objections to claim 8 have been obviated, and respectfully request their withdrawal.

The Office Action objected to claim 14 for lack of antecedent basis for the term "the coating". Applicants have amended claim 14 to depend from claim 12 and submit that claim 12 provides proper antecedent basis for the term "the coating". Accordingly, Applicants believe the objection to claim 14 has been obviated and respectfully requests its withdrawal.

Claims 26, 28, and 30-33 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,932,969 (Frey et al.).

Claims 1-5, 11, 12, 20-22, 27, and 29 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Frey et al., in view of International Publication No. WO 97/14377 (Van Hoeck et al.).

Claims 8, 9, and 23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Frey et al. and Van Hoeck et al. and further in view of U.S. Patent No. 5,192,327 (Brantigan).

Claim 14 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Frey et al. and Van Hoeck et al. and further in view of U.S. Patent No. 4,911,718 (Lee et al.).

Claim 19 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Frey et al. and Van Hoeck et al. and further in view of U.S. Patent No. 4,062,834 (Guilding et al.).

As discussed above, Applicants have amended independent claims 1 and 20 in terms that more clearly define what they regard as their invention. Specifically, Applicants have

amended independent claims 1 and 20 with the recitations of allowable claim 7. Accordingly, for the reasons given above, Applicants believe independent claims 1 and 20, together with the claims dependent thereon, are now in condition for allowance.

Applicants respectfully traverse the rejection of independent claim 26. The aspect of the invention set forth in claim 26 is a bone implant, in particular an inter-vertebral implant, made entirely or in part of a radiation permeable material defining a surface. The implant includes an outer sleeve defining a central chamber for receiving a filler material and configured for permitting new bone growth therethrough. The outer sleeve has a front section, a back section, and first and second lateral sections. The bone implant also includes a first partition and a second partition. The first and second partitions connect the front section to the back section so as to subdivide the central chamber. The first and second partitions are spaced relative to one another and formed with the outer sleeve so as to define superior and inferior support areas for engaging and supporting endplates of adjacent inter-vertebral bodies. The bone implant further includes a plurality of perforations in the outer sleeve and the first and second partitions. The perforations are in communication with the central chamber for receiving and fixing the filler material with respect to the implant. A cross brace is located between the first and second partitions for laterally supporting the first and second partitions and at least a portion of the surface has surface irregularities for fixation of the new bone growth.

Among other notable features of claim 26 are that the implant includes an outer sleeve defining a central chamber for receiving a filler material and configured for permitting new bone growth therethrough, and a plurality of perforations in the outer sleeve and the first and second partitions where the perforations are in communication with the central chamber for receiving and fixing the filler material with respect to the implant.

Frey et al., as understood by Applicants, relates to a joint endoprosthesis. Apparently, Frey et al. teaches that the joint endoprosthesis is formed of a compressible elastic hollow body which is disposed between two anchoring elements. The hollow body defines a closed cavity which is filled with an incompressible fluid medium. Compressive loadings near the edges of the endoprosthesis cause a displacement of the liquid into relieved regions of the prosthesis so as to avoid tensile forces from occurring in the anchoring of the prosthesis to the bones. Nothing has been found in Frey et al. that teaches or suggests an outer sleeve defining a central chamber for receiving a filler material and configured for permitting new bone growth therethrough, and a plurality of perforations in the outer sleeve and the first and second partitions where the perforations are in communication with the central chamber for receiving and fixing the filler material with respect to the implant, as recited in claim 26.

The Office Action states that Frey et al. anticipates the claim language of claim 26. The Office Action states that Figures 1 and 2 of Frey et al. discloses a substantially circular shape. Applicants wish to point out that claim 26 of the present application does not recite or describe the shape of the bone implant.

The Office Action further states that the perforations in the outer sleeve and the first and second partitions of claim 26 equate to the open-celled wire mesh of Frey et al. Applicants respectfully disagree. As discussed on page 4 of the specification and depicted in Figures 1 and 4, the perforations recited in claim 26 refer to openings (reference designators 5 and 8) in the outer sleeve and the first and second partitions, not an open-celled wire mesh. The body 6 of the Frey et al. endoprosthesis is a closed cavity which is filled with an incompressible fluid medium 8. The closed cavity is subdivided into smaller cavities by a plurality of partitions 9 that have passage openings to communicate the cavities with each other so that the incompressible fluid medium 8 is free to move from cavity to cavity to effect liquid equalization between stressed and unstressed cavities. (column 2, lines 59-68). Thus, if the Frey et al. endoprosthesis were to contain perforations in the outer sleeve similar to the present invention, as recited in claim 26, the incompressible fluid medium 8 would not be able to be contained in the cavity and thus not able to effect liquid equalization.

Applicants also note that the Office Action further associates the wire mesh of Frey et al. with the surface irregularities of claim 26. As discussed in the specification of the present application, the perforations and the surface irregularities are distinctly separate claim elements.

The Office Action fails to address the claim feature that the bone implant comprises "an outer sleeve defining a central chamber for receiving a filler material and configured for permitting new bone growth therethrough". As discussed above, the body 6 of the Frey et al. endoprosthesis is a closed cavity which is filled with an incompressible fluid medium 8 to allow liquid equalization between stressed and unstressed cavities during stressing. Thus, the closed cavity of the Frey et al. endoprosthesis is not configured for permitting new bone growth but rather for providing means to effect liquid equalization between stressed and unstressed cavities.

Accordingly, Applicants submit that claim 26 is not anticipated by Frey et al., and respectfully request withdrawal of the rejection under 35 U.S.C. § 102(b).

The remaining rejected claims, claims 27-33, in this application depend from independent claim 26 discussed above, and, therefore, are submitted to be patentable for at least the same reasons. Since each dependent claim is also deemed to define an additional

aspect of the invention, individual reconsideration of the patentability of each claim on its own merits is respectfully requested.

In light of the above amendments and remarks, the Applicants respectfully request that the Examiner reconsider this application with a view towards allowance. The Examiner is invited to call the undersigned attorney if a telephone call could help resolve any remaining items.

Respectfully submitted,

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